1982 ASPHALT REPORT

1982 BITUMINOUS MATERIALS DATA ANALYSIS

MATERIALS BUREAU

AUGUST, 1983

NYSDOT
Library
50 Wolf Road, POD 34
Albany, New York 12232

1982 ASPHALT MATERIALS DATA ANALYSIS

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* PLEASE NOTE THE DISTINCTION BETWEEN "SAMPLE" AND "RECORD".
A SAMPLE MAY BE TESTED AND THEN RETESTED (CHECKTEST) THUS CREATING TWO RECORDS.

A. ADMINISTRATIVE DATA

1982 ASPHALT MATERIALS ANALYSIS

1982 ASPHALT MATERIALS DATA
TOTAL RECORDS BY GRADE, RESULTS, ACTION
TEST TYPE=ALL, REQUEST AGENCY=ALL

		RESULT							ACTION		
GRADE	ITEM NO.	PASS (1)	S C (2)	INVALID SAMPLE (3)	FAIL (4)	SUM VALID (1+2+4)	ERROR (≠1, 2, 3 or 4)	TOTAL (1+2+3+4 +ERROR)	ACCEPT	REJECT	NO ACTION
AC-5	702-0200	16	2	0	0	18	8	26	26	0	0
AC-15	702-0400	319	2	0	4	325	0	325	301	4	20
AC-20	702-0500	1047	22	0	7	1076	0	1076	1032	5	39
85-100	702-0600	68	8	0	3	79	0	79	69	2	8
RS-1	702-3001	29	2	0	2	33	0	33	31	2	0
RS-2	702-3101	65	0	2	0	65	0	67	65	0	2
MS-2	702-3201	167	0	0	15	182	1	183	169	14	0
HFMS-2	702-3301	52	14	0	5	71	0	71	66	5	0
HFMS-2H	702-3401	20	1	5	9	30	0	35	27	1	7
HFRS-2	702-80	17	0	0	0	17	0	17	17	0	0
SS-1	702-3501	1	0	0	0	1	0	1	1	0	0
SS-1H	702-3601	0	0	0	10	10	0	10	0	0	10
CRS-1	702-4001	1	0	0	0	1	0	1	1	0	0
CRS-2	702-4101	56	0	6	0	56	0	62	56	0	6
CSS-1H	702-4501	2	0	1	4	6	0	7	2	2	3
MC-250	702-22	1	0	0	0	1	0	1	1	0	0
CRS-2	702-90**	0	0	0	10	10	0	10	0	10	0
CSS-1H	702-90**	43	7	8	13	63	0	71	50	13	8
HFMS-2H	702-90**	144	50	3	75	269	0	272	213	42	17
SS-1H	702-90**	28	16	1	14	58	0	59	50	6	3
T O T A L S		2076	124	26	171	2371	9	2406	2177	106	123

** TACK COAT

1982 ASPHALT MATERIALS DATA
TOTAL RECORDS BY GRADE,RESULT,ACTION
TEST TYPE=NORMAL;REQUEST AGENCY=DOT NORMAL,MAINTENANCE,RECORD SAMPLE

		RESULT							ACTION		
GRADE	ITEM NO.	PASS (1)	S C (2)	INVALID SAMPLE (3)	FAIL (4)	SUM VALID (1+2+4)	ERROR (≠1,2, 3 or 4)	TOTAL (1+2+3+4 +ERROR)	ACCEPT	REJECT	NO ACTION
AC-5	702-0200	15	1	0	0	16	4	20	20	0	0
AC-15	702-0400	310	1	0	1	312	0	312	291	1	20
AC-20	702-0500	984	11	0	3	998	0	998	957	2	39
85-100	702-0600	67	4	0	1	72	0	72	63	1	8
RS-1	702-3001	29	1	0	1	31	0	31	30	1	0
RS-2	702-3101	65	0	2	0	65	0	67	65	0	2
MS-2	702-3201	166	0	0	7	173	1	174	167	7	0
HFMS-2	702-3301	50	7	0	2	59	0	59	57	2	0
HFMS-2H	702-3401	16	1	5	3	20	0	25	18	0	7
HFRS-2	702-80	17	0	0	0	17	0	17	17	0	0
SS-1	702-3501	1	0	0	0	1	0	1	1	0	0
SS-1H	702-3601	0	0	0	5	5	0	5	0	0	5
CRS-1	702-4001	1	0	0	0	1	0	1	1	0	0
CRS-2	702-4101	56	0	6	0	56	0	62	56	0	6
CSS-1H	702-4501	2	0	1	2	4	0	5	2	1	2
MC-250	702-22	1	0	0	0	1	0	1	1	0	0
CRS-2	702-90**	0	0	0	5	5	0	5	0	5	0
CSS-1H	702-90**	43	4	6	8	55	0	61	47	7	7
HFMS-2H	702-90**	142	25	3	39	206	0	209	181	18	10
SS-1H	702-90**	28	8	1	8	44	0	45	39	4	2
T O T A L S		1993	63	24	86	2142	5	2171	2014	49	108

** TACK COAT

SAMPLES BY REQUESTING AGENCY

ALL TEST TYPES EXCEPT RETESTS

AGENCY	SUBTOTAL
DOT NORMAL	2081
DOTMAINT	27
RECSAMPLE	126
DOTENGR	8
DOT ERDB	0
THRUWAY	0
OTHER	3
ERROR	4
GRAND TOTALS	2249

SAMPLES BY REQUESTING AGENCY

TEST TYPE NORMAL ONLY

AGENCY	SUBTOTAL
DOT NORMAL	2019
DOTMAINT	27
RECSAMPLE	125
DOTENGR	2
DOTERDB	0
THRUWAY	0
OTHER	3
ERROR	4
GRAND TOTALS	2180

1982 ASPHALT MATERIALS DATA
TOTAL SAMPLES BY PRIMESOURCE,GRADE

GRADE :		AC-5	AC-15	AC-20	85-100	RS-1	RS-2	MS-2	HFMS-2	HFMS-2H
MATL. DESIGNATION (702-) :		-0200	-0400	-0500	-0600	-3001	-3101	-3201	-3301	-3401
PRIMESOURCE										
ALBANY ASP	ALBANY	0	0	0	0	2	30	24	0	1
ALLE-CAT	ALLEGANY	0	0	0	0	0	0	5	0	0
ALLEGHANY	BELMONT	0	0	0	0	0	0	4	0	0
ARCO	3 RIVERS	0	0	249	0	0	0	0	0	0
ARCO	PHILADELPHIA	0	0	7	0	0	0	0	0	0
ASHLAND	TONAWANDA	18	47	0	0	0	0	0	0	0
B.P.-CANADA	MONTREAL	0	1	0	31	0	0	0	0	0
B.P.-CANADA	OAKVILLE	0	163	0	8	0	0	0	0	0
BAKELITE	QUEBEC	0	0	0	0	0	0	16	14	0
BIMASCO	HAUPPAUGE	0	0	0	0	1	0	0	0	4
BITUMAR CAN	MONTREAL	0	0	0	0	0	0	0	0	0
CENTRAL ASP	WATKNS GLEN	0	0	0	0	4	0	6	20	8
CHEVRON	PORTLAND,CT.	0	0	0	0	0	0	0	0	0
CHEVRON	PERTH AMBOY	0	0	87	0	0	0	0	0	0
CHEVRON	TROY	0	0	37	0	0	0	0	5	1
CHEVRON	LYONS	0	0	127	0	0	0	0	0	0
CHEVRON	MONTREAL	0	0	0	0	0	0	2	0	0
CIBRO	ALBANY	0	0	98	0	0	0	0	0	0
CIBRO	THREE RIVERS	0	0	51	0	0	0	0	0	0
COLPROVIA	NEW WINDSOR	0	0	0	0	0	0	0	0	1
CORTLAND	CORTLAND	0	0	0	0	20	0	15	18	8
DOSCH-KING	WHIPPANY	0	0	0	0	0	0	0	0	0
EXXON	LINDEN	0	0	52	0	0	0	0	0	0
EXXON	3 RIVERS	0	0	2	0	0	0	0	0	0
GULF CANADA	MISSISSAGUA	0	25	0	0	0	0	0	0	0
IMPERIAL	MONTREAL	0	0	0	1	0	0	0	0	0
MARATHON	TONAWANDA	5	59	0	0	0	0	0	0	0
MIDLAND	TONAWANDA	0	0	0	0	0	0	91	0	0
MOHAWK	SCOTIA	0	0	0	0	0	0	4	0	3
MULCO	MONTREAL	0	0	0	0	0	0	0	0	0
NYS EMULSION	UTICA	0	0	0	0	4	19	5	0	0
NYS EMULSION	CHEEKTOWAGA	0	0	0	0	0	17	0	2	0
NYS EMULSION	ROCHESTER	0	0	0	0	0	0	0	0	0
NYS EMULSION	BUFFALO	0	0	0	0	0	1	0	0	1
OSWEGO	CENTRAL SQ	0	0	0	0	0	0	1	0	0
PARCO	STAMFORD	0	0	100	0	0	0	0	0	0
PECKHAM/PARCO	ATHENS	0	0	176	0	0	0	2	0	0
PETRO-CANADA	MONTREAL	0	0	2	18	0	0	0	0	0
SHELL CANADA	MONTREAL	0	0	15	17	0	0	0	0	0
SHELL CANADA	OAKVILLE	0	8	0	0	0	0	0	0	0
UNITED REF	WARREN	0	19	1	0	0	0	0	0	0
WEST BANK	KEARNY	0	0	57	0	0	0	0	0	0
WEST BANK	PENNSAUKEN	0	0	1	0	0	0	0	0	0
TOTALS		21	322	1082	73	31	87	175	69	25

1982 ASPHALT MATERIALS DATA
TOTAL SAMPLES BY PRIMESOURCE, GRADE

GRADE : / MATL. DESIGNATION (702-) :		HFRS-2 -80	SS-1 -3501	SS-1H -3601	CRS-1 -4001	CRS-2 -4101	CMS-2 -4201	CMS-2H -4301	CSS-1 -4401	CSS-1H -4501
PRIMESOURCE										
ALBANY ASP	ALBANY	0	0	0	0	1	0	0	0	0
ALLE-CAT	ALLEGANY	0	0	0	0	0	0	0	0	0
ALLEGHANY	BELMONT	0	0	0	0	41	0	0	0	0
ARCO	3 RIVERS	0	0	0	0	0	0	0	0	0
ARCO	PHILADELPHIA	0	0	0	0	0	0	0	0	0
ASHLAND	TONAWANDA	0	0	0	0	0	0	0	0	0
B.P.-CANADA	MONTREAL	0	0	0	0	0	0	0	0	0
B.P.-CANADA	OAKVILLE	0	0	0	0	0	0	0	0	0
BAKELITE	QUEBEC	0	0	0	0	0	0	0	0	0
BIMASCO	HAUPPAUGE	0	0	0	0	0	0	0	0	0
BITUMAR CAN	MONTREAL	0	0	0	0	0	0	0	0	0
CENTRAL ASP	WATKNS GLEN	5	0	0	0	0	0	0	0	0
CHEVRON	PORTLAND, CT.	0	0	0	0	0	0	0	0	0
CHEVRON	PERTH AMBOY	0	0	0	0	0	0	0	0	0
CHEVRON	TROY	0	0	0	0	0	0	0	0	0
CHEVRON	LYONS	0	0	5	0	0	0	0	0	0
CHEVRON	MONTREAL	0	0	0	0	0	0	0	0	0
CIBRO	ALBANY	0	0	0	0	0	0	0	0	0
CIBRO	THREE RIVERS	0	0	0	0	0	0	0	0	0
COLPROVIA	NEW WINDSOR	0	0	0	0	0	0	0	0	3
CORTLAND	CORTLAND	0	0	0	0	1	0	0	0	0
DOSCH-KING	WHIPPANY	0	0	0	0	1	0	0	0	0
EXXON	LINDEN	0	0	0	0	0	0	0	0	0
EXXON	3 RIVERS	0	0	0	0	0	0	0	0	0
GULF CANADA	MISSISSAGUA	0	0	0	0	0	0	0	0	0
IMPERIAL	MONTREAL	0	0	0	0	0	0	0	0	0
MARATHON	TONAWANDA	0	0	0	0	0	0	0	0	0
MIDLAND	TONAWANDA	0	0	0	0	0	0	0	0	0
MOHAWK	SCOTIA	0	0	0	0	0	0	0	0	0
MULCO	MONTREAL	0	0	0	0	0	0	0	0	0
NYS EMULSION	UTICA	4	0	0	0	18	0	0	0	0
NYS EMULSION	CHEEKTOWAGA	0	1	0	0	0	0	0	0	0
NYS EMULSION	ROCHESTER	0	0	0	0	0	0	0	0	0
NYS EMULSION	BUFFALO	8	0	0	0	0	0	0	0	0
OSWEGO	CENTRAL SQ	0	0	0	1	0	0	0	0	2
PARCO	STAMFORD	0	0	0	0	0	0	0	0	0
PECKHAM/PARCO	ATHENS	0	0	0	0	0	0	0	0	0
PETRO-CANADA	MONTREAL	0	0	0	0	0	0	0	0	0
SHELL CANADA	MONTREAL	0	0	0	0	0	0	0	0	0
SHELL CANADA	OAKVILLE	0	0	0	0	0	0	0	0	0
UNITED REF	WARREN	0	0	0	0	0	0	0	0	0
WEST BANK	KEARNY	0	0	0	0	0	0	0	0	0
WEST BANK	PENNSAUKEN	0	0	0	0	0	0	0	0	0
TOTALS		17	1	5	1	62	0	0	0	5

1982 ASPHALT MATERIALS DATA
TOTAL SAMPLES BY PRIMESOURCE,GRADE

GRADE : / MATL. DESIGNATION (702-) :		MC-250 -22	CRS-2** -90	CSS-1H** -90	HFMS-2H** -90	SS-1H** -90	ERROR (BLANK,0)	TOTAL
PRIMESOURCE								
ALBANY ASP	ALBANY	0	0	0	78	1	0	137
ALLE-CAT	ALLEGANY	0	0	0	0	0	0	5
ALLEGHANY	BELMONT	0	5	0	0	0	0	50
ARCO	3 RIVERS	0	0	0	0	0	0	249
ARCO	PHILADELPHIA	0	0	0	0	0	0	7
ASHLAND	TONAWANDA	0	0	0	0	0	0	63
B.P.-CANADA	MONTREAL	0	0	0	0	0	0	32
B.P.-CANADA	OAKVILLE	0	0	0	0	0	0	169
BAKELITE	QUEBEC	0	0	0	0	0	0	30
BIMASCO	HAUPPAUGE	0	0	1	1	0	0	7
BITUMAR CAN	MONTREAL	0	0	0	8	0	0	8
CENTRAL ASP	WATKNS GLEN	0	0	0	8	0	0	49
CHEVRON	PORTLAND,CT.	0	0	3	0	0	0	3
CHEVRON	PERTH AMBOY	1	0	0	0	0	0	88
CHEVRON	TROY	0	0	0	0	29	0	43
CHEVRON	LYONS	0	0	0	0	0	0	161
CHEVRON	MONTREAL	0	0	0	0	0	0	2
CIBRO	ALBANY	0	0	0	0	0	0	98
CIBRO	THREE RIVERS	0	0	0	0	0	0	51
COLPROVIA	NEW WINDSOR	0	0	9	0	0	0	13
CORTLAND	CORTLAND	0	0	0	13	0	0	75
DOSCH-KING	WHIPPANY	0	0	0	0	0	0	1
EXXON	LINDEN	0	0	0	0	0	0	52
EXXON	3 RIVERS	0	0	0	0	0	0	2
GULF CANADA	MISSISSAGUA	0	0	0	0	0	0	25
IMPERIAL	MONTREAL	0	0	0	0	0	0	1
MARATHON	TONAWANDA	0	0	0	0	0	0	64
MIDLAND	TONAWANDA	0	0	0	37	0	0	128
MOHAWK	SCOTIA	0	0	44	0	15	0	51
MULCO	MONTREAL	0	0	0	0	0	0	15
NYS EMULSION	UTICA	0	0	0	0	0	0	50
NYS EMULSION	CHEEKTOWAGA	0	0	0	21	0	0	41
NYS EMULSION	ROCHESTER	0	0	0	8	0	0	8
NYS EMULSION	BUFFALO	0	0	0	37	0	0	47
OSWEGO	CENTRAL SQ	0	0	4	0	0	0	8
PARCO	STAMFORD	0	0	0	0	0	0	100
PECHHAM/PARCO	ATHENS	0	0	0	0	0	0	178
PETRO-CANADA	MONTREAL	0	0	0	0	0	0	20
SHELL CANADA	MONTREAL	0	0	0	0	0	0	32
SHELL CANADA	OAKVILLE	0	0	0	0	0	0	8
UNITED REF	WARREN	0	0	0	0	0	0	20
WEST BANK	KEARNY	0	0	0	0	0	0	57
WEST BANK	PENNSAUKEN	0	0	0	0	0	0	1
T O T A L S		1	5	61	211	45	0	2249

** TACK COAT

1982 ASPHALT MATERIALS DATA
TOTAL CEMENT DATA RECORDS BY CODING PARAMETERS

	TEST TYPE	REQ AGENCY	TOTAL
GRADE AC - 5	1	1	13
	1	3	7
	1	7	1
	2	1	5
SUBTOTAL			26
GRADE AC - 15	1	6	2
	1	1	275
	1	2	6
	1	3	31
	2	1	3
	3	1	8
SUBTOTAL			325
GRADE AC - 20	1	6	1
	1	1	931
	1	3	67
	1	4	2
	1	7	1
	2	1	13
	2	3	1
	3	1	53
	3	3	1
	4	4	6
SUBTOTAL			1076
GRADE 85-100	1	1	55
	1	3	17
	1	7	1
	2	1	6
SUBTOTAL			79
TOTAL			1506

TEST RECORD CODING PARAMETERS

REQUESTING AGENCY:

1 - DOT NORMAL
2 - DOT MAINTENANCE
3 - RECORD SAMPLING
4 - DOT ENGINEERING
5 - DOT ER&DB
6 - THRUWAY
7 - OTHER
b - UNKNOWN/ERROR

TEST TYPE:

1 - NORMAL
2 - CHECK
3 - ADDITIONAL GROUP
4 - INFO SAMPLE
b - UNKNOWN/ERROR

A10

Card 1 →

BR 170 Serial No. 8 13

Date Rec'd 14 Month / Day / Year 19

Date Sampled 20 Month / Day / Year 25

Primary Source (See list) 26 29

Lot Number 30 33

Grade 34 - 39

Materials Designation 40 7 0 2 - 44

Region 47 48

Mixing plant code (See list) 49 52

Emulsions No. in Group 53 54

Cont. No. 55 66

Card 2 → 9 (Circle Agency)

Requesting Agency: DOT Normal 1 | DOT Maintenance 2 | Record Sampling 3 | DOT Engineering 4 | DOT Engr. Research 5 | Thruway 6 | Other 7 →

Crude Source 10: Normal 1 | Canadian Mid-Continent 2 | Boscan 3 | Other 4 →

Results 11 (Circle Result): Specifications met 1 | Substantial Conformance 2 | Invalid Sample 3 | Below Acceptable Standards 4

By

Test Number 12 L B 21

Test Date 22 Month / Day / Year 27

Test Type 28 (Circle Type): Normal 1 | Check 2 | Add'l Gp 3 | Info Sample 4

Refer to 29 L B 38

Line No. 39 43

Checked by

ITEM	ANALYSIS	1 = Sat. 2 = Unsat.
Particle Charge (in A. (+,-))	44	45
Specific Gravity @ 60F	46 50	51
Specific Gravity @ 77F	52 56	57
Homogeneity		58
Water %	59 61	62
Solubility	63 66	67
Flash Point (°F)	68 70	71
Softening Pt. R&B (°F)	72 74	75

Card 3 → 1 = Sat. 2 = Unsat.

DISTILLATE [CUTBACKS]:

Distillate to °F	% Vol.	% total	
320	8 11	12 15	16
374	17 20	21 24	25
437	26 29	30 33	34
500	35 38	39 42	43
	44 47	48 51	52
680	53 56	57 60	61
RESIDUE	62 65	66 69	70

Card 4 → 1 = Sat. 2 = Unsat.

ITEM	ANALYSIS	
THIN FILM OVEN TEST:		
% Difference (+, -)	8 9 12	13
Penetration @ 77F 100g, 5 Sec. (.1mm)	— , — , —	
[Indicate striking can bottom with "+" in fourth box]	14 AVG 16 17	18
% original pen @ 77F	19 20	21
Ductility @ 60F 5cm/min. (cm)	22 24 + = over	26
Kinematic Viscosity @ 275F (C. Stokes)	27 32	33
Absolute Viscosity 140F, 30cm. (poise)	34 39	40
Viscosity Ratio 60C [after TFOT / before TFOT]	41 42	43
STANDARD LOSS:		
Loss of Heating @ 325F (%)	44 46	47
% orig. pen. @ 77F	48 50	51
DISTILLATE [EMULSIONS]:		
Residue (%)	52 54	55
Petroleum Spirits (%)	56 58	59
Float Test @ 140F (Sec.)	60 63 + = over	65

Card 5 → 1 = Sat. 2 = Unsat.

ITEM	ANALYSIS	
Kinematic Viscosity @ 140F (C. Stokes)	8 13	14
Kinematic Viscosity @ 275F (C. Stokes)	15 20	21
Absolute Viscosity @ 140F, 30cm, (poise)	22 27	28
Penetration @77F 100g, 5 Sec. (.1mm)	— , — , —	
[Indicate striking can bottom with "+" in fourth box]	29 AVG 31 32	33
Penetration @ 39.2F 200g, 60 Sec. (.1mm) AVG.	34 36 37	
Pen. Ratio Pen at 39.2F / Pen at 77F	38 40	41
Ductility @ 60F 5 cm/min. (cm)	42 44 + = over	46
pH	47 48	49
Demulsibility (n/50) % by wt.	50 52	53
Demulsibility (n/10) % by wt.	54 56	57
Stripping Test		58
Stone Coating		59
Lot Year	60 61	

Card 5 → (CIRCLE ACTION)

FINAL ACTION 62: ACCEPT 1 | REJECT 2 | NO ACTION 3

by

date

BR 18-1b(8/78)

B. TECHNICAL DATA

1982 ASPHALT MATERIALS ANALYSIS

1982 ASPHALT MATERIALS DATA
CEMENT DATA SUMMARY STATISTICS

GRADE	RECORDS*	N	PEN 77F		AB VISC 140F		KIN VISC 275F	
			MEAN	SD	MEAN	SD	MEAN	SD
AC-5	21	21	156.0	6.0	485.1	71.6	N/A	
AC-15	314	314	83.5	7.1	1386.2	106.4	N/A	
AC-20	1002	1002	74.5	23.1	1935.6	185.7	N/A	
85-100	73	73	86.9	2.8	N/A		341.7	16.1

*INCLUDES ALL REQUESTING AGENCIES, TEST-TYPE = 1 (NORMAL)
BEFORE DATA SCREENING FOR BLANKS,ETC.

HISTOGRAMS OF VISCOSITY

1982 ASPHALT CEMENT DATA

a. AC-5

b. AC-15

c. AC-20

d. 85-100

a. 1982 ASPHALT MATERIALS DATA GRADE AC-5

HISTOGRAM OF VARIABLE AVIS140

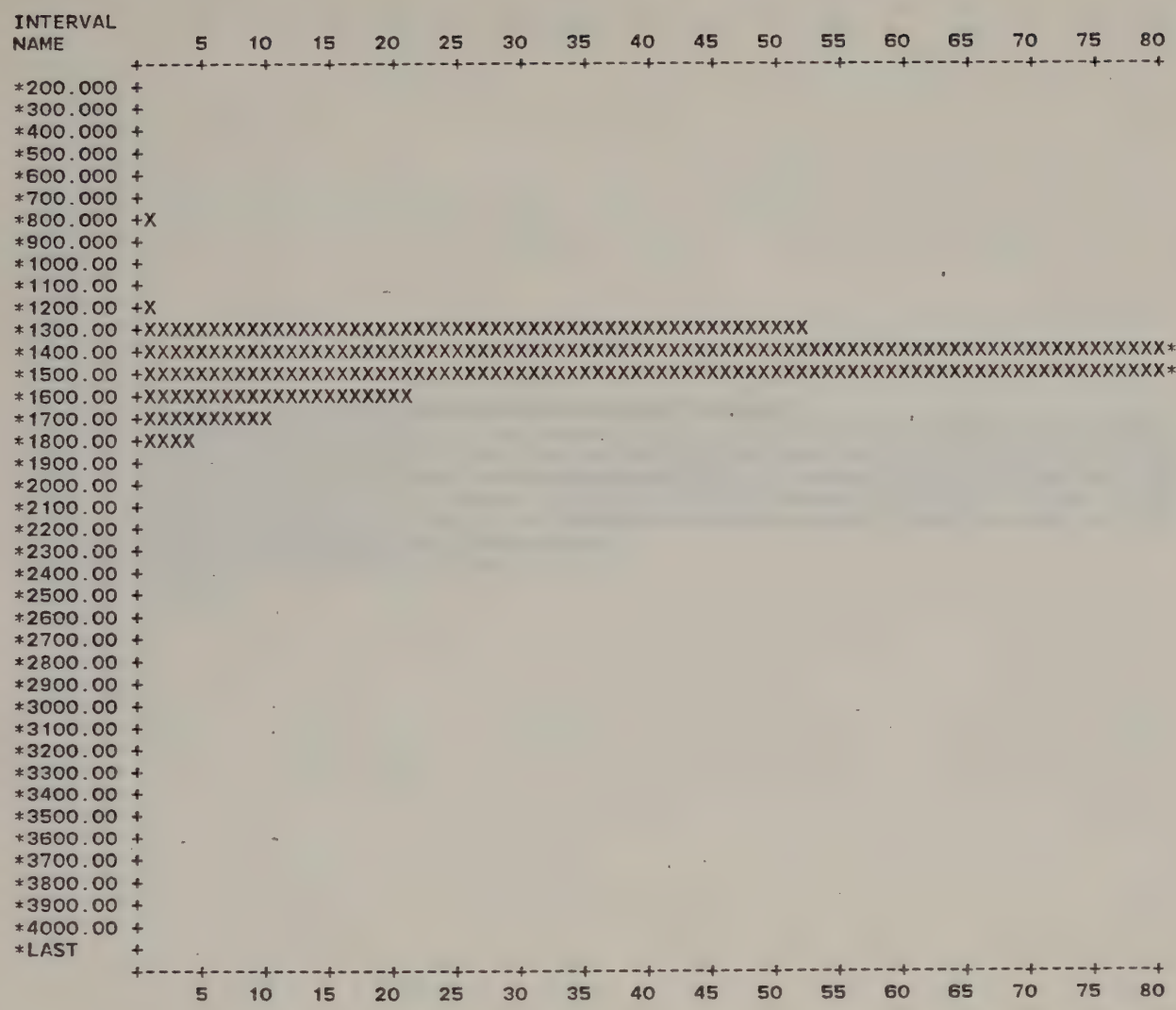
SYMBOL	COUNT	MEAN	ST.DEV.
X	21	485.095	71.616

INTERVAL NAME	5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80	FREQUENCY INT.	FREQUENCY CUM.	PERCENTAGE INT.	PERCENTAGE CUM.
*200.000	+	0	0	0.0	0.0
*300.000	+	0	0	0.0	0.0
*400.000	+	0	0	0.0	0.0
*500.000	+XXXXXXXXXXXXXXXX	16	16	76.2	76.2
*600.000	+	0	16	0.0	76.2
*700.000	+XXXXX	5	21	23.8	100.0
*800.000	+	0	21	0.0	100.0
*900.000	+	0	21	0.0	100.0
*1000.00	+	0	21	0.0	100.0
*1100.00	+	0	21	0.0	100.0
*1200.00	+	0	21	0.0	100.0
*1300.00	+	0	21	0.0	100.0
*1400.00	+	0	21	0.0	100.0
*1500.00	+	0	21	0.0	100.0
*1600.00	+	0	21	0.0	100.0
*1700.00	+	0	21	0.0	100.0
*1800.00	+	0	21	0.0	100.0
*1900.00	+	0	21	0.0	100.0
*2000.00	+	0	21	0.0	100.0
*2100.00	+	0	21	0.0	100.0
*2200.00	+	0	21	0.0	100.0
*2300.00	+	0	21	0.0	100.0
*2400.00	+	0	21	0.0	100.0
*2500.00	+	0	21	0.0	100.0
*2600.00	+	0	21	0.0	100.0
*2700.00	+	0	21	0.0	100.0
*2800.00	+	0	21	0.0	100.0
*2900.00	+	0	21	0.0	100.0
*3000.00	+	0	21	0.0	100.0
*3100.00	+	0	21	0.0	100.0
*3200.00	+	0	21	0.0	100.0
*3300.00	+	0	21	0.0	100.0
*3400.00	+	0	21	0.0	100.0
*3500.00	+	0	21	0.0	100.0
*3600.00	+	0	21	0.0	100.0
*3700.00	+	0	21	0.0	100.0
*3800.00	+	0	21	0.0	100.0
*3900.00	+	0	21	0.0	100.0
*4000.00	+	0	21	0.0	100.0
*LAST	+	0	21	0.0	100.0
	5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80				

b. 1982 ASPHALT MATERIALS DATA GRADE AC-15

HISTOGRAM OF VARIABLE AVIS140

SYMBOL	COUNT	MEAN	ST.DEV.
X	314	1386.236	106.386

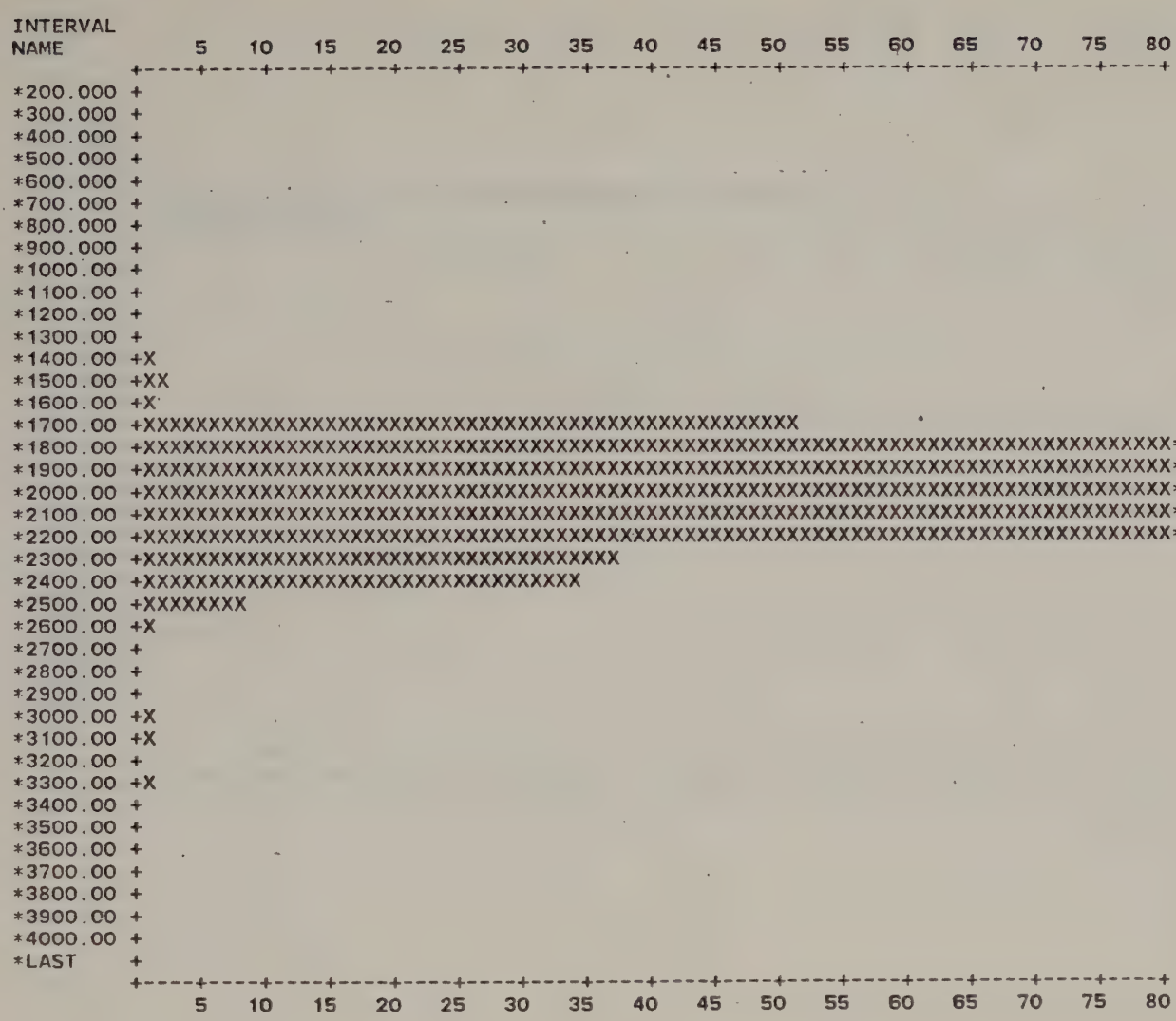


INTERVAL NAME	FREQUENCY INT.	FREQUENCY CUM.	PERCENTAGE INT.	PERCENTAGE CUM.
*200.000	0	0	0.0	0.0
*300.000	0	0	0.0	0.0
*400.000	0	0	0.0	0.0
*500.000	0	0	0.0	0.0
*600.000	0	0	0.0	0.0
*700.000	0	0	0.0	0.0
*800.000	1	1	0.3	0.3
*900.000	0	1	0.0	0.3
*1000.00	0	1	0.0	0.3
*1100.00	0	1	0.0	0.3
*1200.00	1	2	0.3	0.6
*1300.00	52	54	16.6	17.2
*1400.00	139	193	44.3	61.5
*1500.00	86	279	27.4	88.9
*1600.00	21	300	6.7	95.5
*1700.00	10	310	3.2	98.7
*1800.00	4	314	1.3	100.0
*1900.00	0	314	0.0	100.0
*2000.00	0	314	0.0	100.0
*2100.00	0	314	0.0	100.0
*2200.00	0	314	0.0	100.0
*2300.00	0	314	0.0	100.0
*2400.00	0	314	0.0	100.0
*2500.00	0	314	0.0	100.0
*2600.00	0	314	0.0	100.0
*2700.00	0	314	0.0	100.0
*2800.00	0	314	0.0	100.0
*2900.00	0	314	0.0	100.0
*3000.00	0	314	0.0	100.0
*3100.00	0	314	0.0	100.0
*3200.00	0	314	0.0	100.0
*3300.00	0	314	0.0	100.0
*3400.00	0	314	0.0	100.0
*3500.00	0	314	0.0	100.0
*3600.00	0	314	0.0	100.0
*3700.00	0	314	0.0	100.0
*3800.00	0	314	0.0	100.0
*3900.00	0	314	0.0	100.0
*4000.00	0	314	0.0	100.0
*LAST	0	314	0.0	100.0

c. 1982 ASPHALT MATERIALS DATA GRADE AC-20

HISTOGRAM OF VARIABLE AVIS140

SYMBOL	COUNT	MEAN	ST.DEV.
X	1002	1935.640	185.714



INTERVAL NAME	FREQUENCY INT.	FREQUENCY CUM.	PERCENTAGE INT.	PERCENTAGE CUM.
*200.000	0	0	0.0	0.0
*300.000	0	0	0.0	0.0
*400.000	0	0	0.0	0.0
*500.000	0	0	0.0	0.0
*600.000	0	0	0.0	0.0
*700.000	0	0	0.0	0.0
*800.000	0	0	0.0	0.0
*900.000	0	0	0.0	0.0
*1000.00	0	0	0.0	0.0
*1100.00	0	0	0.0	0.0
*1200.00	0	0	0.0	0.0
*1300.00	0	0	0.0	0.0
*1400.00	1	1	0.1	0.1
*1500.00	2	3	0.2	0.3
*1600.00	1	4	0.1	0.4
*1700.00	51	55	5.1	5.5
*1800.00	185	240	18.5	24.0
*1900.00	242	482	24.2	48.1
*2000.00	210	692	21.0	69.1
*2100.00	142	834	14.2	83.2
*2200.00	85	919	8.5	91.7
*2300.00	37	956	3.7	95.4
*2400.00	34	990	3.4	98.8
*2500.00	8	998	0.8	99.6
*2600.00	1	999	0.1	99.7
*2700.00	0	999	0.0	99.7
*2800.00	0	999	0.0	99.7
*2900.00	0	999	0.0	99.7
*3000.00	1	1000	0.1	99.8
*3100.00	1	1001	0.1	99.9
*3200.00	0	1001	0.0	99.9
*3300.00	1	1002	0.1	100.0
*3400.00	0	1002	0.0	100.0
*3500.00	0	1002	0.0	100.0
*3600.00	0	1002	0.0	100.0
*3700.00	0	1002	0.0	100.0
*3800.00	0	1002	0.0	100.0
*3900.00	0	1002	0.0	100.0
*4000.00	0	1002	0.0	100.0
*LAST	0	1002	0.0	100.0

d. 1982 ASPHALT MATERIALS DATA GRADE 85-100

HISTOGRAM OF VARIABLE KVIS275

```
                          SYMBOL  COUNT    MEAN     ST.DEV.
                            X      73     341.671    16.105

INTERVAL                                                                          FREQUENCY PERCENTAGE
NAME           5    10   15   20   25   30   35   40   45   50   55   60   65   70   75   80  INT.  CUM.  INT.   CUM.
          +----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+
*100.000  +                                                                                  0     0    0.0    0.0
*150.000  +                                                                                  0     0    0.0    0.0
*200.000  +                                                                                  0     0    0.0    0.0
*250.000  +                                                                                  0     0    0.0    0.0
*300.000  +                                                                                  0     0    0.0    0.0
*350.000  +XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX                         56    56   76.7   76.7
*400.000  +XXXXXXXXXXXXXXXXX                                                                17    73   23.3  100.0
*450.000  +                                                                                  0    73    0.0  100.0
*500.000  +                                                                                  0    73    0.0  100.0
*550.000  +                                                                                  0    73    0.0  100.0
*600.000  +                                                                                  0    73    0.0  100.0
*650.000  +                                                                                  0    73    0.0  100.0
*700.000  +                                                                                  0    73    0.0  100.0
*750.000  +                                                                                  0    73    0.0  100.0
*800.000  +                                                                                  0    73    0.0  100.0
*850.000  +                                                                                  0    73    0.0  100.0
*900.000  +                                                                                  0    73    0.0  100.0
*950.000  +                                                                                  0    73    0.0  100.0
*1000.00  +                                                                                  0    73    0.0  100.0
*1050.00  +                                                                                  0    73    0.0  100.0
*1100.00  +                                                                                  0    73    0.0  100.0
*1150.00  +                                                                                  0    73    0.0  100.0
*1200.00  +                                                                                  0    73    0.0  100.0
*1250.00  +                                                                                  0    73    0.0  100.0
*1300.00  +                                                                                  0    73    0.0  100.0
*1350.00  +                                                                                  0    73    0.0  100.0
*1400.00  +                                                                                  0    73    0.0  100.0
*1450.00  +                                                                                  0    73    0.0  100.0
*1500.00  +                                                                                  0    73    0.0  100.0
*LAST     +                                                                                  0    73    0.0  100.0
          +----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+
               5    10   15   20   25   30   35   40   45   50   55   60   65   70   75   80
```

HISTOGRAMS OF PENETRATION

1982 ASPHALT CEMENT DATA

a. AC-5

b. AC-15

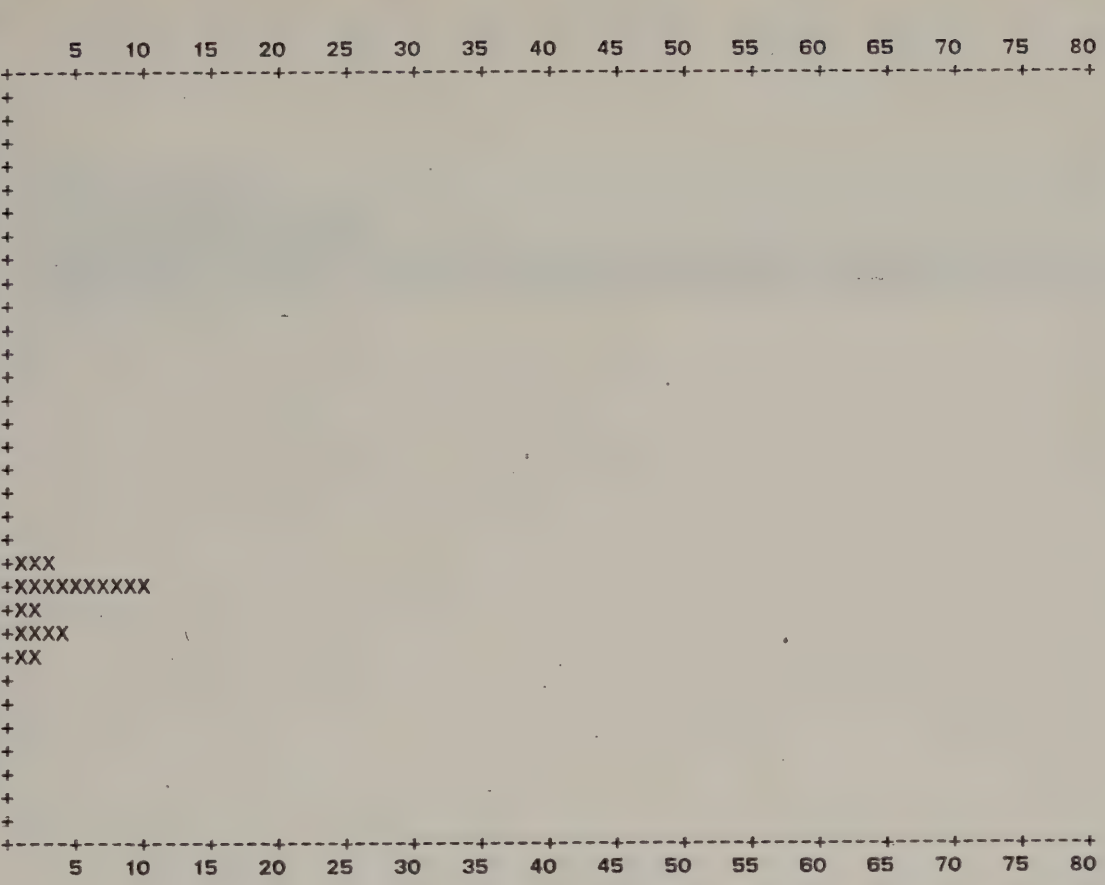
c. AC-20

d. 85-100

a. 1982 ASPHALT MATERIALS DATA GRADE AC-5

HISTOGRAM OF VARIABLE PEN77

SYMBOL	COUNT	MEAN	ST.DEV.
X	21	155.952	5.979



INTERVAL NAME	FREQUENCY INT.	FREQUENCY CUM.	PERCENTAGE INT.	PERCENTAGE CUM.
*50.0000	0	0	0.0	0.0
*55.0000	0	0	0.0	0.0
*60.0000	0	0	0.0	0.0
*65.0000	0	0	0.0	0.0
*70.0000	0	0	0.0	0.0
*75.0000	0	0	0.0	0.0
*80.0000	0	0	0.0	0.0
*85.0000	0	0	0.0	0.0
*90.0000	0	0	0.0	0.0
*95.0000	0	0	0.0	0.0
*100.000	0	0	0.0	0.0
*105.000	0	0	0.0	0.0
*110.000	0	0	0.0	0.0
*115.000	0	0	0.0	0.0
*120.000	0	0	0.0	0.0
*125.000	0	0	0.0	0.0
*130.000	0	0	0.0	0.0
*135.000	0	0	0.0	0.0
*140.000	0	0	0.0	0.0
*145.000	0	0	0.0	0.0
*150.000	3	3	14.3	14.3
*155.000	10	13	47.6	61.9
*160.000	2	15	9.5	71.4
*165.000	4	19	19.0	90.5
*170.000	2	21	9.5	100.0
*175.000	0	21	0.0	100.0
*180.000	0	21	0.0	100.0
*185.000	0	21	0.0	100.0
*190.000	0	21	0.0	100.0
*195.000	0	21	0.0	100.0
*200.000	0	21	0.0	100.0
*LAST	0	21	0.0	100.0

b. 1982 ASPHALT MATERIALS DATA GRADE AC-15

HISTOGRAM OF VARIABLE PEN77

SYMBOL	COUNT	MEAN	ST.DEV.
X	314	83.478	7.147

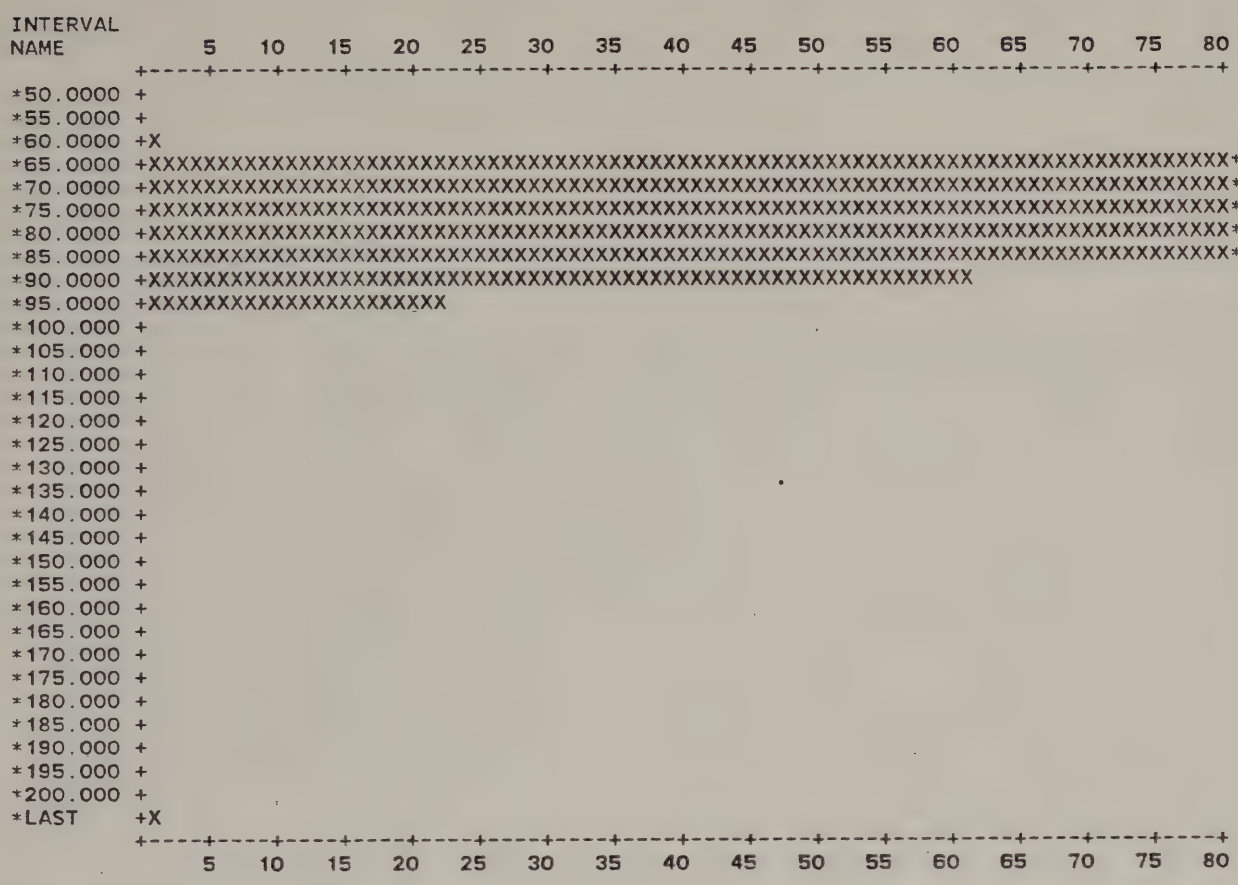
```
INTERVAL
NAME        5   10   15   20   25   30   35   40   45   50   55   60   65   70   75   80
          +----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+
*50.0000  +
*55.0000  +
*60.0000  +
*65.0000  +XXXXXX
*70.0000  +XXXXXXXXXXXXXXXXXX
*75.0000  +XXXXXXXXXXXXXXXXXXXXXXXXX
*80.0000  +XXXXXXXXXXXXXXXXXXXXXXXXX
*85.0000  +XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
*90.0000  +XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX*
*95.0000  +XXXXXXXXXXXXXXXX
*100.000  +
*105.000  +X
*110.000  +X
*115.000  +
*120.000  +
*125.000  +
*130.000  +
*135.000  +
*140.000  +
*145.000  +
*150.000  +
*155.000  +
*160.000  +
*165.000  +
*170.000  +
*175.000  +
*180.000  +
*185.000  +
*190.000  +
*195.000  +
*200.000  +
*LAST     +
          +----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+
               5   10   15   20   25   30   35   40   45   50   55   60   65   70   75   80
```

INTERVAL NAME	FREQUENCY INT.	FREQUENCY CUM.	PERCENTAGE INT.	PERCENTAGE CUM.
*50.0000	0	0	0.0	0.0
*55.0000	0	0	0.0	0.0
*60.0000	0	0	0.0	0.0
*65.0000	6	6	1.9	1.9
*70.0000	19	25	6.1	8.0
*75.0000	26	51	8.3	16.2
*80.0000	25	76	8.0	24.2
*85.0000	79	155	25.2	49.4
*90.0000	141	296	44.9	94.3
*95.0000	16	312	5.1	99.4
*100.000	0	312	0.0	99.4
*105.000	1	313	0.3	99.7
*110.000	1	314	0.3	100.0
*115.000	0	314	0.0	100.0
*120.000	0	314	0.0	100.0
*125.000	0	314	0.0	100.0
*130.000	0	314	0.0	100.0
*135.000	0	314	0.0	100.0
*140.000	0	314	0.0	100.0
*145.000	0	314	0.0	100.0
*150.000	0	314	0.0	100.0
*155.000	0	314	0.0	100.0
*160.000	0	314	0.0	100.0
*165.000	0	314	0.0	100.0
*170.000	0	314	0.0	100.0
*175.000	0	314	0.0	100.0
*180.000	0	314	0.0	100.0
*185.000	0	314	0.0	100.0
*190.000	0	314	0.0	100.0
*195.000	0	314	0.0	100.0
*200.000	0	314	0.0	100.0
*LAST	0	314	0.0	100.0

c. 1982 ASPHALT MATERIALS DATA GRADE AC-20

HISTOGRAM OF VARIABLE PEN77

SYMBOL	COUNT	MEAN	ST.DEV.
X	1002	74.554	23.129



INTERVAL NAME	FREQUENCY INT.	FREQUENCY CUM.	PERCENTAGE INT.	PERCENTAGE CUM.
*50.0000	0	0	0.0	0.0
*55.0000	0	0	0.0	0.0
*60.0000	1	1	0.1	0.1
*65.0000	85	86	8.5	8.6
*70.0000	296	382	29.5	38.1
*75.0000	258	640	25.7	63.9
*80.0000	189	829	18.9	82.7
*85.0000	89	918	8.9	91.6
*90.0000	61	979	6.1	97.7
*95.0000	22	1001	2.2	99.9
*100.000	0	1001	0.0	99.9
*105.000	0	1001	0.0	99.9
*110.000	0	1001	0.0	99.9
*115.000	0	1001	0.0	99.9
*120.000	0	1001	0.0	99.9
*125.000	0	1001	0.0	99.9
*130.000	0	1001	0.0	99.9
*135.000	0	1001	0.0	99.9
*140.000	0	1001	0.0	99.9
*145.000	0	1001	0.0	99.9
*150.000	0	1001	0.0	99.9
*155.000	0	1001	0.0	99.9
*160.000	0	1001	0.0	99.9
*165.000	0	1001	0.0	99.9
*170.000	0	1001	0.0	99.9
*175.000	0	1001	0.0	99.9
*180.000	0	1001	0.0	99.9
*185.000	0	1001	0.0	99.9
*190.000	0	1001	0.0	99.9
*195.000	0	1001	0.0	99.9
*200.000	0	1001	0.0	99.9
*LAST	1	1002	0.1	100.0

d. 1982 ASPHALT MATERIALS DATA GRADE 85-100

HISTOGRAM OF VARIABLE PEN77

SYMBOL	COUNT	MEAN	ST.DEV.
X	73	86.918	2.807

INTERVAL NAME	5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80	FREQUENCY INT.	FREQUENCY CUM.	PERCENTAGE INT.	PERCENTAGE CUM.
*50.0000	+	0	0	0.0	0.0
*55.0000	+	0	0	0.0	0.0
*60.0000	+	0	0	0.0	0.0
*65.0000	+	0	0	0.0	0.0
*70.0000	+	0	0	0.0	0.0
*75.0000	+X	1	1	1.4	1.4
*80.0000	+X	1	2	1.4	2.7
*85.0000	+XXXXXXXXXXXXXXXXX	18	20	24.7	27.4
*90.0000	+XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX	49	69	67.1	94.5
*95.0000	+XXXX	4	73	5.5	100.0
*100.000	+	0	73	0.0	100.0
*105.000	+	0	73	0.0	100.0
*110.000	+	0	73	0.0	100.0
*115.000	+	0	73	0.0	100.0
*120.000	+	0	73	0.0	100.0
*125.000	+	0	73	0.0	100.0
*130.000	+	0	73	0.0	100.0
*135.000	+	0	73	0.0	100.0
*140.000	+	0	73	0.0	100.0
*145.000	+	0	73	0.0	100.0
*150.000	+	0	73	0.0	100.0
*155.000	+	0	73	0.0	100.0
*160.000	+	0	73	0.0	100.0
*165.000	+	0	73	0.0	100.0
*170.000	+	0	73	0.0	100.0
*175.000	+	0	73	0.0	100.0
*180.000	+	0	73	0.0	100.0
*185.000	+	0	73	0.0	100.0
*190.000	+	0	73	0.0	100.0
*195.000	+	0	73	0.0	100.0
*200.000	+	0	73	0.0	100.0
*LAST	+	0	73	0.0	100.0
	5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80				

MEAN VISCOSITY, PENETRATION BY PRIMESOURCE

1982 ASPHALT CEMENT DATA

a. AC-5

b. AC-15

c. AC-20

d. 85-100

a. 1982 ASPHALT MATERIALS DATA GRADE AC-5

VARIABLE NO.	NAME	GROUPING VARIABLE	LEVEL	TOTAL FREQUENCY	MEAN	STANDARD DEVIATION	ST.ERR OF MEAN	COEFF. OF VARIATION	SMALLEST VALUE	SMALLEST Z-SCORE	LARGEST VALUE	LARGEST Z-SCORE	RANGE
5	AVIS140			21	485.095	71.616	15.6278	0.14763	409.000	-1.06	608.000	1.72	199.000
		PSOURCE	ASHLAND-	16	447.313	21.023	5.2557	0.04700	409.000	-1.82	491.000	2.08	82.000
			ARCO-3R	0									
			ARCO-PH	0									
			CHEV-LYN	0									
			CHEV-PMB	0									
			CHEV-TRY	0									
			EXXN-LIN	0									
			EXXON-3R	0									
			MAR-TON	5	606.000	2.000	0.8944	0.00330	603.000	-1.50	608.000	1.00	5.000
			PKHM-ATH	0									
			IMP-MONT	0									
			UNITED-W	0									
			WBNK-KRN	0									
			WBNK-PEN	0									
			CIBRO-AL	0									
			CIBRO-3R	0									
			SHELL-MO	0									
			SHELL-OA	0									
			GULF-MIS	0									
			PETRO-MO	0									
			BP-MONT	0									
			BP-OAK	0									
			PARCO-ST	0									

a. 1982 ASPHALT MATERIALS DATA GRADE AC-5

VARIABLE NO.	NAME	GROUPING VARIABLE	LEVEL	TOTAL FREQUENCY	MEAN	STANDARD DEVIATION	ST.ERR OF MEAN	COEFF. OF VARIATION	SMALLEST VALUE	SMALLEST Z-SCORE	LARGEST VALUE	LARGEST Z-SCORE	RANGE
6	PEN77			21	155.952	5.979	1.3047	0.03834	146.000	-1.66	167.000	1.85	21.000
		PSOURCE	ASHLAND-	16	156.750	6.608	1.6520	0.04216	146.000	-1.63	167.000	1.55	21.000
			ARCO-3R	0									
			ARCO-PH	0									
			CHEV-LYN	0									
			CHEV-PMB	0									
			CHEV-TRY	0									
			EXXN-LIN	0									
			EXXON-3R	0									
			MAR-TON	5	153.400	2.074	0.9274	0.01352	151.000	-1.16	156.000	1.25	5.000
			PKHM-ATH	0									
			IMP-MONT	0									
			UNITED-W	0									
			WBNK-KRN	0									
			WBNK-PEN	0									
			CIBRO-AL	0									
			CIBRO-3R	0									
			SHELL-MO	0									
			SHELL-OA	0									
			GULF-MIS	0									
			PETRO-MO	0									
			BP-MONT	0									
			BP-OAK	0									
			PARCO-ST	0									

b. 1982 ASPHALT MATERIALS DATA GRADE AC-15

VARIABLE NO.	NAME	GROUPING VARIABLE	LEVEL	TOTAL FREQUENCY	MEAN	STANDARD DEVIATION	ST.ERR OF MEAN	COEFF. OF VARIATION	SMALLEST VALUE	SMALLEST Z-SCORE	LARGEST VALUE	LARGEST Z-SCORE	RANGE
5	AVIS140			314	1386.236	106.386	6.0037	0.07674	762.000	-5.87	1768.000	3.59	1006.000
		PSOURCE	ASHLND-T	43	1490.186	84.488	12.8842	0.05670	1283.000	-2.45	1688.000	2.34	405.000
			ARCO-3R	0									
			ARCO-PH	0									
			CHEV-LYN	0									
			CHEV-PMB	0									
			CHEV-TRY	0									
			EXXN-LIN	0									
			EXXON-3R	0									
			MAR-TON	56	1400.321	122.294	16.3422	0.08733	762.000	-5.22	1768.000	3.01	1006.000
			PKHM-ATH	0									
			IMP-MONT	0									
			UNITED-W	18	1565.111	97.684	23.0244	0.06241	1440.000	-1.28	1740.000	1.79	300.000
			WBNK-KRN	0									
			WBNK-PEN	0									
			CIBRO-AL	0									
			CIBRO-3R	0									
			SHELL-MO	0									
			SHELL-OA	8	1401.375	54.374	19.2242	0.03880	1310.000	-1.68	1460.000	1.08	150.000
			GULF-MIS	25	1344.040	59.031	11.8061	0.04392	1126.000	-3.69	1440.000	1.63	314.000
			PETRO-MO	0									
			BP-MONT	1	1347.000	0.000	0.0000	0.00000	1347.000	0.00	1347.000	0.00	0.000
			BP-OAK	163	1340.190	66.129	5.1796	0.04934	1208.000	-2.00	1578.000	3.60	370.000
			PARCO-ST	0									

b. 1982 ASPHALT MATERIALS DATA GRADE AC-15

VARIABLE NO.	NAME	GROUPING VARIABLE	LEVEL	TOTAL FREQUENCY	MEAN	STANDARD DEVIATION	ST.ERR OF MEAN	COEFF. OF VARIATION	SMALLEST VALUE	SMALLEST Z-SCORE	LARGEST VALUE	LARGEST Z-SCORE	RANGE
6	PEN77			314	83.478	7.147	0.4033	0.08562	62.000	-3.01	107.000	3.29	45.000
		PSOURCE	ASHLND-T	43	74.791	5.768	0.8795	0.07712	65.000	-1.70	87.000	2.12	22.000
			ARCO-3R	0									
			ARCO-PH	0									
			CHEV-LYN	0									
			CHEV-PMB	0									
			CHEV-TRY	0									
			EXXN-LIN	0									
			EXXON-3R	0									
			MAR-TON	56	85.000	6.051	0.8086	0.07119	69.000	-2.64	107.000	3.64	38.000
			PKHM-ATH	0									
			IMP-MONT	0									
			UNITED-W	18	68.667	6.490	1.5297	0.09451	62.000	-1.03	82.000	2.05	20.000
			WBNK-KRN	0									
			WBNK-PEN	0									
			CIBRO-AL	0									
			CIBRO-3R	0									
			SHELL-MO	0									
			SHELL-OA	8	83.250	2.252	0.7962	0.02705	80.000	-1.44	86.000	1.22	6.000
			GULF-MIS	25	88.480	4.575	0.9149	0.05170	79.000	-2.07	104.000	3.39	25.000
			PETRO-MO	0									
			BP-MONT	1	89.000	0.000	0.0000	0.00000	89.000	0.00	89.000	0.00	0.000
			BP-OAK	163	86.092	3.710	0.2906	0.04309	71.000	-4.07	93.000	1.86	22.000
			PARCO-ST	0									

c. 1982 ASPHALT MATERIALS DATA GRADE AC-20

VARIABLE NO.	NAME	GROUPING VARIABLE	LEVEL	TOTAL FREQUENCY	MEAN	STANDARD DEVIATION	ST.ERR OF MEAN	COEFF. OF VARIATION	SMALLEST VALUE	SMALLEST Z-SCORE	LARGEST VALUE	LARGEST Z-SCORE	RANGE
5	AVIS140			1002	1935.640	185.714	5.8669	0.09594	1336.000	-3.23	3241.000	7.03	1905.000
		PSOURCE	ASHLND-T	0									
			ARCO-3R	245	1913.049	146.558	9.3632	0.07661	1480.000	-2.95	2439.000	3.59	959.000
			ARCO-PH	7	1823.286	155.624	58.8204	0.08535	1653.000	-1.09	2040.000	1.39	387.000
			CHEV-LYN	92	1780.174	88.956	9.2743	0.04997	1620.000	-1.80	2037.000	2.89	417.000
			CHEV-PMB	84	1929.988	243.402	26.5574	0.12612	1676.000	-1.04	3241.000	5.39	1565.000
			CHEV-TRY	37	1868.432	153.258	25.1955	0.08203	1646.000	-1.45	2292.000	2.76	646.000
			EXXN-LIN	52	1997.558	137.444	19.0600	0.06881	1701.000	-2.16	2328.000	2.40	627.000
			EXXON-3R	2	1992.000	4.243	3.0000	0.00213	1989.000	-0.71	1995.000	0.71	6.000
			MAR-TON	0									
			PKHM-ATH	174	1903.172	145.461	11.0274	0.07643	1336.000	-3.90	2509.000	4.16	1173.000
			IMP-MONT	0									
			UNITED-W	1	1520.000	0.000	0.0000	0.00000	1520.000	0.00	1520.000	0.00	0.000
			WBNK-KRN	57	2015.123	180.592	23.9200	0.08962	1759.000	-1.42	2995.000	5.43	1236.000
			WBNK-PEN	1	1943.000	0.000	0.0000	0.00000	1943.000	0.00	1943.000	0.00	0.000
			CIBRO-AL	92	2136.283	159.111	16.5884	0.07448	1610.000	-3.31	2483.000	2.18	873.000
			CIBRO-3R	51	2162.235	197.164	27.6085	0.09119	1688.000	-2.41	2472.000	1.57	784.000
			SHELL-MO	6	1870.333	171.969	70.2062	0.09195	1679.000	-1.11	2157.000	1.67	478.000
			SHELL-OA	0									
			GULF-MIS	0									
			PETRO-MO	1	2130.000	0.000	0.0000	0.00000	2130.000	0.00	2130.000	0.00	0.000
			BP-MONT	0									
			BP-OAK	0									
			PARCO-ST	100	1855.260	112.312	11.2312	0.06054	1610.000	-2.18	2276.000	3.75	666.000

c. 1982 ASPHALT MATERIALS DATA GRADE AC-20

VARIABLE NO.	NAME	GROUPING VARIABLE	LEVEL	TOTAL FREQUENCY	MEAN	STANDARD DEVIATION	ST.ERR OF MEAN	COEFF. OF VARIATION	SMALLEST VALUE	SMALLEST Z-SCORE	LARGEST VALUE	LARGEST Z-SCORE	RANGE
6	PEN77			1002	74.554	23.129	0.7307	0.31023	59.000	-0.67	771.000	30.11	712.000
		PSOURCE	ASHLND-T	0									
			ARCO-3R	245	72.441	45.037	2.8773	0.62171	61.000	-0.25	771.000	15.51	710.000
			ARCO-PH	7	75.000	3.873	1.4639	0.05164	69.000	-1.55	79.000	1.03	10.000
			CHEV-LYN	92	77.250	2.748	0.2865	0.03557	69.000	-3.00	83.000	2.09	14.000
			CHEV-PMB	84	74.298	5.318	0.5803	0.07158	59.000	-2.88	88.000	2.58	29.000
			CHEV-TRY	37	78.595	4.298	0.7065	0.05468	66.000	-2.93	86.000	1.72	20.000
			EXXN-LIN	52	68.846	4.517	0.6265	0.06562	61.000	-1.74	81.000	2.69	20.000
			EXXON-3R	2	76.000	0.000	0.0000	0.00000	76.000	0.00	76.000	0.00	0.000
			MAR-TON	0									
			PKHM-ATH	174	70.402	4.844	0.3672	0.06881	61.000	-1.94	89.000	3.84	28.000
			IMP-MONT	0									
			UNITED-W	1	68.000	0.000	0.0000	0.00000	68.000	0.00	68.000	0.00	0.000
			WBNK-KRN	57	75.333	4.557	0.6035	0.06048	66.000	-2.05	85.000	2.12	19.000
			WBNK-PEN	1	79.000	0.000	0.0000	0.00000	79.000	0.00	79.000	0.00	0.000
			CIBRO-AL	92	87.011	5.035	0.5249	0.05787	65.000	-4.37	95.000	1.59	30.000
			CIBRO-3R	51	80.843	6.525	0.9137	0.08071	66.000	-2.27	91.000	1.56	25.000
			SHELL-MO	6	77.667	1.862	0.7601	0.02397	76.000	-0.90	81.000	1.79	5.000
			SHELL-OA	0									
			GULF-MIS	0									
			PETRO-MO	1	70.000	0.000	0.0000	0.00000	70.000	0.00	70.000	0.00	0.000
			BP-MONT	0									
			BP-OAK	0									
			PARCO-ST	100	70.870	3.419	0.3419	0.04824	61.000	-2.89	80.000	2.67	19.000

d. 1982 ASPHALT MATERIALS DATA GRADE 85-100

VARIABLE NO.	NAME	GROUPING VARIABLE	LEVEL	TOTAL FREQUENCY	MEAN	STANDARD DEVIATION	ST.ERR OF MEAN	COEFF. OF VARIATION	SMALLEST VALUE	SMALLEST Z-SCORE	LARGEST VALUE	LARGEST Z-SCORE	RANGE
4	KVIS275			73	341.671	16.105	1.8849	0.04714	316.000	-1.59	387.000	2.81	71.000
		PSOURCE	ASHLND-T	0									
			ARCO-3R	0									
			ARCO-PH	0									
			CHEV-LYN	0									
			CHEV-PMB	0									
			CHEV-TRY	0									
			EXXN-LIN	0									
			EXXON-3R	0									
			MAR-TON	0									
			PKHM-ATH	0									
			IMP-MONT	1	370.000	0.000	0.0000	0.00000	370.000	0.00	370.000	0.00	0.000
			UNITED-W	0									
			WBNK-KRN	0									
			WBNK-PEN	0									
			CIBRO-AL	0									
			CIBRO-3R	0									
			SHELL-MO	17	351.882	19.567	4.7456	0.05561	318.000	-1.73	372.000	1.03	54.000
			SHELL-OA	0									
			GULF-MIS	0									
			PETRO-MO	18	332.833	14.247	3.3580	0.04280	316.000	-1.18	354.000	1.49	38.000
			BP-MONT	31	341.774	12.412	2.2292	0.03632	324.000	-1.43	387.000	3.64	63.000
			BP-OAK	6	334.000	5.329	2.1756	0.01596	325.000	-1.69	338.000	0.75	13.000
			PARCO-ST	0									

d. 1982 ASPHALT MATERIALS DATA GRADE 85-100

VARIABLE NO.	NAME	GROUPING VARIABLE	LEVEL	TOTAL FREQUENCY	MEAN	STANDARD DEVIATION	ST.ERR OF MEAN	COEFF. OF VARIATION	SMALLEST VALUE	SMALLEST Z-SCORE	LARGEST VALUE	LARGEST Z-SCORE	RANGE
6	PEN77			73	86.918	2.807	0.3286	0.03230	74.000	-4.60	94.000	2.52	20.000
		PSOURCE	ASHLND-T	0									
			ARCO-3R	0									
			ARCO-PH	0									
			CHEV-LYN	0									
			CHEV-PMB	0									
			CHEV-TRY	0									
			EXXN-LIN	0									
			EXXON-3R	0									
			MAR-TON	0									
			PKHM-ATH	0									
			IMP-MONT	1	74.000	0.000	0.0000	0.00000	74.000	0.00	74.000	0.00	0.000
			UNITED-W	0									
			WBNK-KRN	0									
			WBNK-PEN	0									
			CIBRO-AL	0									
			CIBRO-3R	0									
			SHELL-MO	17	88.471	2.787	0.6758	0.03150	85.000	-1.25	94.000	1.98	9.000
			SHELL-OA	0									
			GULF-MIS	0									
			PETRO-MO	18	87.722	1.934	0.4559	0.02205	82.000	-2.96	90.000	1.18	8.000
			BP-MONT	31	85.968	2.089	0.3753	0.02430	79.000	-3.33	91.000	2.41	12.000
			BP-OAK	6	87.167	0.408	0.1667	0.00468	87.000	-0.41	88.000	2.04	1.000
			PARCO-ST	0									

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